## ABSTRACT

## A STUDY OF COGNITIVE EVOKED POTENTIALS AND SERUM LEPTIN LEVELS IN YOUNG OBESE INDIVIDUALS

Degree for which submitted : Doctor of Medicine (MD) in Physiology.

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Year : 2019

**Background:**

Rising prevalence of Obesity is a major public health concern in developing countries especially in India. In addition to the well-known adverse health effects of obesity which is influenced by high intake of junk food and western diet intake in young individuals, recent evidence points to the fact that the cognitive function is also compromised in the presence of obesity. Serum leptin level is a better potential screening tool for predicting overweight and obesity.

Advanced screening tool to diagnose cognitive decline in obesity has been proven to be Cognitive evoked potentials. Recently researchers have established a direct relationship between obesity and cognitive function. Obesity and high intake of fats results in increased free fatty acid levels in the systemic circulation. The physiological process of inflammation that occurs in brain, mainly in the hypothalamus, could possibly

affect its cognitive function. By means of life style modification and exercise, this cognitive decline may be reversed in early stages.

**Aim and objectives:**

1. To estimate the latency and amplitude of $P_{300}$ evoked potentials in young obese and non-obese individuals.
2. To estimate the anthropometric measurements (i.e the standing height & weight), the measures of obesity indices (i.e the Waist and Hip Circumference, the Waist/Hip ratio and the BMI) in obese individuals
3. To find out the correlation between the Sr.leptin levels and obesity indices, variables of $P_{300}$ among the study group.

**Methods and Methodology:**

There were eighty participants in the study. Forty participants with BMI > 30 were taken as case group and forty participants with BMI 18 – 24.9 were taken as control group. Cognitive evoked potential $P_{300}$ was measured in both case and control group. Serum leptin levels were measured in both the case and the control group.

**Results:**

Prolonged latency and decreased amplitude was observed in the young obese individuals when compared to that of the young non obese individuals ($p< 0.001$). The serum leptin levels were raised in the young obese individuals when compared to that of the young non obese individuals ($p<0.001$). There is significant positive correlation

between the $P_{300}$ latency and the serum leptin level and significant negative correlation between $P_{300}$ amplitude and the serum leptin level in the study group.

**Conclusion:**

The young obese individuals showed a significant impairment in event related potential $P_{300}$ latency and amplitude when compared to that of young non obese individuals. The serum leptin levels, used as a cognitive marker seem to be directly correlated with the $P_{300}$ evoked potential findings in young obese individuals.

**Key words:**

Obesity, Cognitive evoked potential, $P_{300}$ Latency, $P_{300}$ Amplitude, Serum Leptin levels.